



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,247	12/11/2001	Kent K. Leung	CISCP243/4258	6305

22434 7590 06/01/2006

BEYER WEAVER & THOMAS LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER

CERVONE, MICHAEL ANTHONY

ART UNIT	PAPER NUMBER
----------	--------------

2131

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/015,247	Applicant(s) LEUNG ET AL.	
	Examiner Michael A. Cervone	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment filed on March 14, 2006. The original application contained claims 1-82: Per the received amendment, claims 1, 6, 14, 15, 19-21, 23-26, 27, 32-34, 37-40, 44, 52, 53, 55-56, 59-64, 66-75 and 77-82 have been amended. Presently pending claims are 1-82.

2. In response to amendment of claim 6, the 112 rejection has been withdrawn.

3. Notice of non-compliant amendment has been submitted due to the fact that the status identifier of claim 76 is (Currently Amended) where it should be (Original).

Response to Arguments

4. Applicant's arguments with respect to claims 1-36, 39-72 and 76-82 have been considered but are moot in view of the new ground(s) of rejection.

5. As per claims 37, 38 and 73-75 as amended, Applicant argues that Chowdhury "specifically relates to RADIUS ACCESS REQUEST and ACCEPT messages, rather than Mobile IP registration request and reply messages". Examiner respectfully disagrees as pointed to in the new citations as stated in the rejection below.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4, 44-46, 52, 67-69 and 77-79 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US 6,167,513).

8. As per claim 1, Inoue is directed to a method of registering a Mobile Node in a Mobility Agent supporting Mobile IP comprising:

a. Receiving a Mobile IP registration request packet from the mobile node, indicating that a key to be shared by the mobile node and an agent with which the mobile node is registering is requested, wherein the agent with which the Mobile Node is registering is a Home Agent. [See Col. 17 lines 3-9]

b. Obtaining a key to be shared by the mobile node and the agent with which the mobile node is registering. [See Col. 13 lines 26-31 as well as Col. 17, line 60 – Col. 18, line 22]

c. Storing the key to be shared by the mobile node and the agent with which the mobile node is registering. [See Col. 17, line 60 – Col. 18, line 22. Although Inoue does not specifically disclose that the key is stored, it is inherently disclosed by the fact that it is used again multiple times by both the node and the agent.]

d. Sending a Mobile IP registration reply packet to the mobile node including the key to be shared by the mobile node and the agent with which the mobile node is registering. [See Col. 17 lines 3-9 as well as Col. 17, line 60 – Col. 18, line 22]

9. Claims 67-69 are “system”, “computer-readable medium”, and “apparatus” claims analogous to “method” claim 1. Claims 67-69 are rejected based on the same rationale as the rejection of claim 1.

10. As per claim 2, Inoue is applied as stated in the rejection of claim 1. Inoue further teaches creating a registration entry for the mobile node in a mobility binding table (database). [See Col. 24, lines 47-60]

11. As per claim 3, Inoue is applied as stated in the rejection of claim 1. Inoue further teaches that obtaining a key to be shared by the mobile node and the agent with which the mobile node is registering comprises:

a. Composing a request packet including authentication information (ex: user ID) associated with the mobile node and key request indicating that a key to be

shared by the mobile node and the agent with which the mobile node is registering is requested. [See Col. 17, line 60 – Col. 18, line 22]

b. Sending the request packet to a network device (gateway) adapted for authenticating the mobile node. [See Col. 17 lines 3-9 as well as Col. 17, line 60 – Col. 18, line 22]

c. Receiving a reply packet from the network device in response to the key request, the reply packet including a key to be shared by the mobile node and the agent with which the mobile node is registering. [See Col. 17 lines 3-9 as well as Col. 17, line 60 – Col. 18, line 22]

12. As per claim 4, Inoue is applied as stated in the rejection of claim 3. Inoue further teaches that the network device (Gateway) is on a home network associated with the mobile node and the mobility agent is on a foreign network to which the mobile node has roamed. [See Col. 17, lines 13-22]

13. As per claim 44, Inoue is directed to method of registering a mobile node in a mobility agent supporting mobile IP comprising:

a. Receiving a Mobile IP registration request packet from the mobile node, indicating that a home agent with which the mobile node is to register is to be assigned to the mobile node. [See Col. 18 lines 16-36].

- b. Obtaining a home agent assignment, the home agent assignment identifying the home agent with which the mobile node is to register. [See Col. 17, line 60 – Col. 18 line 22]
 - c. Sending a Mobile IP registration reply packet to the mobile node identifying the home agent with which the mobile node is to register. [See Col. 18 line 66 – Col. 19, line 3]
- 14. Claims 77-79 are “system”, “computer-readable medium”, and “apparatus” claims analogous to “method” claim 44. Claims 77-79 are rejected based on the same rationale as the rejection of claim 44.
- 15. As per claim 45, Inoue is applied as stated in the rejection of claim 44. Inoue further teaches creating a registration entry for the mobile node in a mobility binding table (database). [See Col. 24, lines 47-60]
- 16. As per claim 46, Inoue is applied as stated in the rejection of claim 44. Inoue further teaches that wherein obtaining a home agent assignment comprises:
 - a. Composing a request packet including authentication information associated with the mobile node and indicating that a home agent with which the mobile node is registering is to be assigned to the mobile node. [Col. 17, line 60 – Col. 18, line 22].

b. Sending the request packet to a network device adapted for authenticating the mobile node. [Col. 17, line 60 – Col. 18, line 22]

c. Receiving a reply packet from the network device, the reply packet identifying the home agent with which the mobile node is registering. [Col. 17, line 60 – Col. 18, line 22 as well as Col. 18, line 66 – Col. 19 line 3]

17. As per claim 52, Inoue is applied as stated in the rejection of claim 44. Inoue further teaches that the Mobile IP registration reply packet further includes a key to be shared by the mobile node and the home agent with which the mobile node is registering. [See Col. 18 lines 16-22]

18. Claims 37, 38 and 73-75 are rejected under 35 U.S.C. 102(e) as being anticipated by Chowdhury et al. (US 2002/0114323).

19. As per claim 37, Chowdhury is directed to a method of registering a mobile node with an agent supporting mobile IP comprising

i. Composing a first Mobile IP registration request (MIP RRQ) that requests that a home agent be dynamically assigned to the mobile node. [See 0027]

ii. Sending (transmitting) the first Mobile IP registration request (MIP RRQ) to a mobility agent supporting mobile IP. [See 0027 and 0033. Sends it to the PDSN then the PDSN sends it to the mobility agent.]

- iii. Receiving a registration reply (MIP Registration Reply) from the mobility agent, the registration reply identifying a home agent that has been assigned to the mobile node. [See 0035]

20. Claims 73-75 are "system", "computer-readable medium", and "apparatus" claims analogous to "method" claim 37. Claims 73-75 are rejected based on the same rationale as the rejection of claim 37.

21. As per claim 38, Chowdhury is applied as stated in the rejection of claim 37. Chowdhury further teaches sending a second registration request (re-registration) to the home agent that has been assigned to the mobile node. [See 0035]

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 42, 64-65, 76 and 80-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Agraharam et al. (US 6,407,988).

24. As per claim 42, Inoue is directed to a method of authenticating a registration request associated with a mobile node in a network device for performing authentication of a mobile node comprising

- d. Receiving a request packet including authentication information associated with the mobile node and indicating that a home agent is to be assigned to the mobile node. [See Col. 17 lines 3-9 as well as Col. 17, line 60 – Col. 18, line 22]
- e. Authenticating the mobile node using the authentication information [See Col. 18 lines 2-15].
- f. Assigning a home agent to the mobile node [Col. 17, line 60 – Col. 18, line 22].
- g. Sending a reply packet identifying the home agent assigned to the mobile node. [See Col. 18 line 66 – Col. 19, line 3]

Inoue fails to teach the home agent being located on a foreign network that the mobile node is visiting. Agraharam is directed to a method for providing a temporary home agent (pseudo home agent) on a foreign network which teaches the home agent being located on a foreign network that the mobile node is visiting [See Col. 5, line 20 – Col. 6, line 33]. Inoue and Agraharam are analogous art because they are both directed to communications throughout Mobile IP networks. It is obvious to one skilled in the art to allow a home agent to be located on a foreign network in order to provide “enhanced privacy features to mobile hosts and conserve resources of the networks that carry data to the mobile hosts” [See Col. 1, lines 43-46].

25. Claim 76 is a "system" claim analogous to "method" claim 42. Claim 76 is rejected based on the same rationale as the rejection of claim 42.

26. As per claim 64, Inoue is directed to a method of registering a mobile node in a mobility agent supporting mobile IP, comprising:

- d. Receiving a Mobile IP registration request packet, the Mobile IP registration request packet having an extension including a key to be shared by the mobility agent and the mobile node. [See Col. 18, lines 16-36]
- e. Obtaining the key from the extension of the Mobile IP registration request packet. [See Col. 18, lines 36-48]
- f. Storing the key, thereby enabling the mobile node to subsequently register directly with the mobility agent. [See Col. 18, lines 49-65]
- g. Authenticating the Mobile IP registration request packet using the key. [See Col. 18, lines 36-48]
- h. Composing a Mobile IP registration reply packet [See Col. 18, line 66 – Col. 19, line 3]
- i. Sending the Mobile IP registration reply packet to the mobile node. [See Col. 18, line 66 – Col. 19, line 3]

Inoue fails to teach the home agent being located on a foreign network that the mobile node has roamed. Agraharam is directed to a method for providing a temporary home agent (pseudo home agent) on a foreign network which teaches the home agent

being located on a foreign network that the mobile node has roamed [See Col. 5, line 20 – Col. 6, line 33]. Inoue and Agraharam are analogous art because they are both directed to communications throughout Mobile IP networks. It is obvious to one skilled in the art to allow a home agent to be located on a foreign network in order to provide “enhanced privacy features to mobile hosts and conserve resources of the networks that carry data to the mobile hosts” [See Col. 1, lines 43-46].

27. Claims 80-82 are “system”, “computer-readable medium”, and “apparatus” claims analogous to “method” claim 64. Claims 80-82 are rejected based on the same rationale as the rejection of claim 64.

28. As per claim 65, Inoue and Agraharam are applied as stated in the rejection of claim 64. Inoue further teaches decrypting the key. [See Col. 18 lines 44-48]

29. Claims 5, 12, 18-27, 34, 36, 47, 48, 53, 59-63 and 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Chowdhury et al. (US 2002/0114323).

30. As per claim 5, Inoue is applied as stated in the rejection of claim 3. Inoue fails to teach the AAA server and the usage of a RADIUS access request packet. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the network device is a AAA server, wherein the request packet including the authentication

information and the key request is a RADIUS access request packet, the RADIUS access request packet including an authentication attribute having the authentication information and a key request attribute having the key request. [See 0020 and 0034]. Inoue and Chowdhury are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to use an AAA server as well as a RADIUS access request packet as described by Chowdhury in assigning a home agent as described by Inoue. The usage of the AAA server and the RADIUS protocol would increase the security capabilities of Inoue's system.

31. As per claims 12 and 53, Inoue is applied as stated in the rejection of claims 1 and 52, respectively. Inoue fails to teach that the Mobile IP registration reply packet indicates that the mobile node needs to re-register. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the Mobile IP registration reply packet indicates that the mobile node needs to re-register with the agent with the key to be shared by the mobile node and the agent with which the mobile node is registering. [See 0034-0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users, the usage of dynamic assignment can solve these issues [See 0002-0003]. Furthermore, it is obvious to one skilled in the art to re-register a mobile

node when the lifetime of the node expires if one wants to continue to communicate with it.

32. As per claim 18 and 36, Inoue is applied as stated in the rejection of claims 1 and 26, respectively. Inoue fails to teach the agent with which the mobile node is registering is a home agent to be dynamically assigned to the mobile node. Chowdhury is directed to a method for dynamically assigning a home agent that teaches the agent with which the mobile node is registering is a home agent to be dynamically assigned to the mobile node [See 0005]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users, the usage of dynamic assignment can solve these issues [See 0002-0003].

33. As per claim 19, Inoue is applied as stated in the rejection of claim 1.⁶ Inoue fails to teach that the registration request packet indicates that the agent with which the mobile node is registering is a home agent to be dynamically assigned to the mobile node and the registration reply packet identifies that agent with which the mobile node is registering. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the Mobile IP registration request packet (MIP RRQ) indicates that the

agent with which the mobile node is registering is a home agent to be dynamically assigned to the mobile node [See 0027] and the registration reply packet (MIP Registration Reply) identifies that agent with which the mobile node is registering [See 0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

34. As per claim 20, Inoue and Chowdhury are applied as stated in the rejection of claims 19. Chowdhury further teaches the registration reply packet (MIP Registration Reply) further indicates that the agent is to be used by the mobile node in subsequent registration requests (re-registration requests) [See 0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

Art Unit: 2131

35. As per claim 21, Inoue and Chowdhury are applied as stated in the rejection of claim 19. Chowdhury further teaches the Mobile IP registration reply packet (MIP Registration Reply) indicates that the mobile node is to obtain the agent from the Mobile IP registration reply packet (MIP Registration Reply) [See 0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

36. As per claim 22, Inoue and Chowdhury are applied as stated in the rejection of claim 19. Chowdhury further teaches the agent is a home agent on a network to which the mobile node has roamed [See 0032]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

37. As per claim 23, Inoue and Chowdhury are applied as stated in the rejection of claim 19. Chowdhury further teaches that the Mobile IP registration reply packet indicates that the mobile node needs to re-register with the agent with the key [See 0034-0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

38. As per claim 24, Inoue and Chowdhury are applied as stated in the rejection of claim 23. Inoue further teaches:

- a. Receiving a second Mobile IP registration request from the mobile node, the second Mobile IP registration request being addressed to the agent with which the mobile node is registering. [See Col. 18 lines 16-48]
- b. Appending a key reply extension to the second Mobile IP registration request, the key reply extension including the key. [See Col. 18 lines 16-48]
- c. Forwarding the second Mobile IP registration request to the agent with which the mobile node is registering. [See Col. 18 lines 16-48]

39. As per claim 25, Inoue and Chowdhury are applied as stated in the rejection of claim 24. Inoue further teaches:

- d. Receiving a second Mobile IP registration reply from the agent with which the mobile node is registering. [See Col. 18, line 66 – Col. 19 line 8]
- e. Removing the key to be shared by the mobile node and the agent with which the mobile node is registering from storage. [See Col. 18, line 66 – Col. 19 line 24]
- f. Forwarding the second Mobile IP registration reply to the mobile node. [See Col. 18, line 66 – Col. 19 line 24]

40. As per claim 26, Inoue is directed to a method of registering a mobile node with an agent supporting mobile IP, comprising:

- a. Composing a Mobile IP registration request having a key request extension requesting a key to be shared by the mobile node and the agent with which the mobile node is registering. [See Col. 17, line 60 – Col. 18 line 22 as well as Fig. 9].
- b. Sending the Mobile IP registration request to a mobility agent supporting mobile IP. [See Col. 17, lines 3-9].
- c. Obtaining the key to be shared by the mobile node and the agent with which the mobile node is registering from the key reply extension of the Mobile IP registration reply. [See Col. 18, lines 36-48]

d. Storing the key to be shared by the mobile node and the agent with which the mobile node is registering, thereby enabling the mobile node to subsequently register directly with the agent. [See Col. 18, lines 49-65].

Inoue fails to teach the need for the node to re-register with the agent. Chowdhury is directed to a method for dynamically assigning a home agent that teaches receiving a Mobile IP registration reply from the mobility agent, the Mobile IP registration reply indicating that the mobile node needs to re-register with the agent with which the mobile node is registering and having a key reply extension including the key to be shared by the mobile node and the agent with which the mobile node is registering, wherein the agent with which the Mobile node is registering is a Home Agent. [See 0035. Examiner asserts that the re-registration process is the same as the registration process, thus the key would be obtained the same way.] Inoue and Chowdhury are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to re-register a mobile node when the lifetime of the node expires if one wants to continue to communicate with it.

41. Claims 70-72 are "system", "computer-readable medium", and "apparatus" claims analogous to "method" claim 26. Claims 70-72 are rejected based on the same rationale as the rejection of claim 26.

42. As per claim 27, Inoue and Chowdhury are applied as stated in the rejection of claim 26. Inoue further teaches that the agent with which the mobile node is registering is the mobility agent. [See Col. 17, lines 3-9].

43. As per claim 34, Inoue and Chowdhury are applied as stated in the rejection of claim 26. Inoue further teaches that the Mobile IP registration reply further comprises an authentication extension comprising:

Authenticating the Mobile IP registration reply using the authentication extension and the key to be shared by the mobile node and the agent with which the mobile node is registering, thereby verifying that the mobile node and the agent with which the mobile node is registering both share the key to be shared by the mobile node and the agent with which the mobile node is registering [See Col. 18, line 66 – Col. 19, line 47]

44. As per claim 47, Inoue is applied as stated in the rejection of claim 46. Inoue fails to teach the AAA server and the usage of a RADIUS access request packet. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the network device is an AAA server, wherein the request packet is a RADIUS access request packet, the RADIUS access request packet including an authentication attribute having the authentication information and an attribute indicating that a home agent is to be assigned to the mobile node [See 0020 and 0034]. It is obvious to one skilled in the art to use an AAA server as well as a RADIUS access request packet as described by Chowdhury in assigning a home agent as described by

Inoue. The usage of the AAA server and the RADIUS protocol would increase the security capabilities of Inoue's system.

45. As per claim 48, Inoue is applied as stated in the rejection of claim 46. Inoue fails to teach the AAA server and the usage of a RADIUS access request packet. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the network device is an AAA server, wherein the reply packet is a RADIUS access accept packet, the RADIUS access accept packet identifying the home agent [See 0020 and 0034]. It is obvious to one skilled in the art to use an AAA server as well as a RADIUS access request packet as described by Chowdhury in assigning a home agent as described by Inoue. The usage of the AAA server and the RADIUS protocol would increase the security capabilities of Inoue's system.

46. As per claim 59, Inoue is applied as stated in the rejection of claim 44. Inoue fails to teach that the Mobile IP registration reply packet further indicates that the home agent is to be used by the mobile node in subsequent registration requests. Chowdhury is directed to a method for dynamically assigning a home agent that teaches the Mobile IP registration reply packet further indicates that the home agent is to be used by the mobile node in subsequent registration requests (re-registration requests) [See 0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use the re-registration request as described by Chowdhury in the assignment of a home

agent as described by Inoue. It is known in the art to re-register a node should the connection fail or the key expire.

47. As per claim 60, Inoue is applied as stated in the rejection of claim 44. Inoue fails to teach that the Mobile IP registration reply packet indicates that the mobile node is to identify the home agent from the Mobile IP registration reply packet. Chowdhury is directed to a method for dynamically assigning a home agent that teaches the Mobile IP registration reply packet indicates that the mobile node is to identify the home agent from the Mobile IP registration reply packet [See 0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one skilled in the art to use dynamic assignment as described by Chowdhury in assigning a home agent as described by Inoue. Static assignment of home agents can result in an inefficient use of resources and a possible degradation in services provided to the mobile users the usage of dynamic assignment can solve these issues [See 0002-0003].

48. As per claim 61, Inoue is applied as stated in the rejection of claim 52. Inoue fails to teach re-registration. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the Mobile IP registration reply packet indicates that the mobile node needs to re-register with the home agent with the key [See 0034-0035]. Inoue and Chowdhury are analogous art because they are both directed to methods for communications between wireless devices. It is obvious to one

Art Unit: 2131

skilled in the art to use the re-registration request as described by Chowdhury in the assignment of a home agent as described by Inoue. It is known in the art to re-register a node should the connection fail or the key expire.

49. As per claim 62, Inoue and Chowdhury are applied as stated in the rejection of claim 61. Inoue further teaches:

- g. Receiving a second Mobile IP registration request from the mobile node, the second Mobile IP registration request being addressed to the agent with which the mobile node is registering. [See Col. 18 lines 16-48]
- h. Appending a key reply extension to the second registration request, the key reply extension including the key. [See Col. 18 lines 16-48]
- i. Forwarding the second Mobile IP registration request to the agent with which the mobile node is registering. [See Col. 18 lines 16-48]

50. As per claim 63, Inoue and Chowdhury are applied as stated in the rejection of claim 62. Inoue further teaches:

- j. Receiving a second Mobile IP registration reply from the home agent with which the mobile node is registering. [See Col. 18, line 66 – Col. 19 line 8]
- k. Removing the key to be shared by the mobile node and the home agent with which the mobile node is registering from storage. [See Col. 18, line 66 – Col. 19 line 24]

Art Unit: 2131

- I. Forwarding the second Mobile IP registration reply to the mobile node.

[See Col. 18, line 66 – Col. 19 line 24]

51. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al. (US 2002/0114323) in view of Inoue et al. (US 6,167,513).

52. As per claim 39, Chowdhury is applied as stated in the rejection of claim 37. Chowdhury teaches a MS/MN-HA Security Association phase discussing the exchange of keys, but fails to get into detail on the exchange [See 0034]. Inoue is directed to a method for registering and authenticating mobile nodes which teaches that the Mobile IP registration reply further identifies a key to be shared by the mobile node and the home agent that has been assigned to the mobile node, thereby enabling the mobile node to subsequently register directly with the home agent that has been assigned to the mobile node [See Col. 17, line 60 – Col. 18, line 22]. Chowdhury and Inoue are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to transmit a key as described in Inoue in order to provide the MS/MN-HA Security Association phase as described by Chowdhury [See 0034].

53. As per claim 40, Chowdhury and Inoue are applied as stated in the rejection of claim 39. Inoue further teaches:

m. Obtaining the key to be shared by the mobile node and the home agent that has been assigned to the mobile node from the Mobile IP registration reply.

[See Col. 17, line 60 – Col. 18, line 22]

n. Composing a second Mobile IP registration request including the key to be shared by the mobile node and the home agent that has been assigned to the mobile node. [See Col. 18 lines 23-48]

o. Sending the second Mobile IP registration request to the home agent that has been assigned to the mobile node. [See Col. 18 lines 23-48]

Chowdhury and Inoue are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to transmit a key as described in Inoue in order to provide the MS/MN-HA Security Association phase as described by Chowdhury [See 0034].

54. As per claim 41, Chowdhury is applied as stated in the rejection of claim 37.

Chowdhury teaches a MS/MN-HA Security Association phase discussing the exchange of keys, but fails to get into detail on the exchange [See 0034]. Inoue teaches that the registration request further indicates that a key to be shared by the mobile node and the home agent be generated. [See Col. 12, lines 29-50] Chowdhury and Inoue are analogous art because they are both directed to methods for mobile IP registration and communication. It is obvious to one skilled in the art to generate and transmit a key as described in Inoue in order to provide the MS/MN-HA Security Association phase as described by Chowdhury [See 0034].

55. Claims 6, 13-16, 32-33 and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Faccin et al. (US Patent Application Number 2002/0114469).

56. As per claim 6, Inoue is applied as stated in the rejection of claim 3. Inoue fails to teach that the network device is an AAA server, wherein the reply packet is a RADIUS access accept packet, the RADIUS access accept packet including the key to be shared by the Mobile Node and the agent with which the Mobile Node is registering. Faccin is directed to a method for delegating security procedures on a visited domain in which the network device is an AAA server, wherein the reply packet is a RADIUS access accept packet, the RADIUS access accept packet including the first key and the second key. [See 0009]. Inoue and Faccin are analogous art because they are both directed to methods for communications in a mobile IP environment. It is obvious to one skilled in the art to use the method of using a key in the reply as described by Faccin in the assignment of a home agent as described by Inoue. The usage of the two keys will allow a mobile node and a visited network to perform authentication and key distribution without requiring many round trip communications.

57. As per claims 13 and 54, Inoue is applied as stated in the rejection of claims 3 and 52, respectively. Inoue fails to teach that the reply packet including a first key to be provided to the agent with which the mobile node is registering and a second key to be

provided to the mobile node, wherein the first key and the second key are each the key to be shared by the mobile node and the agent with which the mobile node is registering. Faccin is directed to a method for delegating security procedures on a visited domain which teaches that the reply packet including a first key (long term key) to be provided to the agent with which the mobile node is registering and a second key (temporary shared key) to be provided to the mobile node, wherein the first key and the second key are each the key to be shared by the mobile node and the agent with which the mobile node is registering [See 0038 and 0041]. Inoue and Faccin are analogous art because they are both directed to methods for communications in a mobile IP environment. It is obvious to one skilled in the art to use the method of using a key in the reply as described by Faccin in the assignment of a home agent as described by Inoue. The usage of the two keys will allow a mobile node and a visited network to perform authentication and key distribution without requiring many round trip communications.

58. As per claims 14 and 55, Inoue and Faccin are applied as stating in the rejection of claims 13 and 54, respectively. Faccin further teaches:

- p. Obtaining the second key to be provided to the mobile node from the reply packet [See 0041].
- q. Composing the Mobile IP registration reply packet, the Mobile IP registration reply packet comprising the second key to be provided to the mobile node [See 0041].

59. As per claims 15 and 56, Inoue and Faccin are applied as stated in the rejection of claims 14 and 55, respectively. Faccin further teaches that the Mobile IP registration reply packet further comprises a hash of the Mobile IP registration reply packet using the first key to be provide to the agent, the hash of the Mobile IP registration reply packet being provided in a first extension to the Mobile IP registration reply packet and the second key being provided in a second extension to the Mobile IP registration reply packet [See 0032-0033].

60. As per claims 16 and 57, Inoue and Faccin are applied as stated in the rejection of claims 13 and 54, respectively. Faccin further teaches the agent is a mobility agent further comprising decrypting and storing the first key to be provided to the agent [See 0032-0033 and 0050-0051].

61. As per claim 32, Inoue is applied as stated in the rejection of claim 26. Inoue fails to teach further teaches sending a subsequent Mobile IP registration request to the agent including a value (random number) associated with the key to be shared by the mobile node and the agent with which the mobile node is registering. Faccin is directed to a method for delegating security procedures on a visited domain which teaches sending a subsequent registration request to the agent including a value (random number) associated with the key to be shared by the mobile node and the agent with which the mobile node is registering [See 0041]. Inoue and Faccin are analogous art

because they are both directed to methods for communications in a mobile IP environment. It is obvious to one skilled in the art to use the method of using a key in the reply as described by Faccin in the assignment of a home agent as described by Inoue. The usage of the two keys will allow a mobile node and a visited network to perform authentication and key distribution without requiring many round trip communications.

62. As per claim 33, Inoue and Faccin are applied as stated in the rejection of claim 32. Faccin further teaches that the subsequent Mobile IP registration request comprises an authentication extension including a hash value (MD5) of the key to be shared by the mobile node and the agent with which the mobile node is registering [See 0014 and 0032].

63. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Agraharam et al. (US 6,407,988) and further in view of Chowdhury et al. (US 2002/0114323).

64. As per claim 43, Inoue and Agraharam are applied as stated in the rejection of claim 42. Inoue and Agraharam fail to teach the AAA server and the usage of a RADIUS access request packet. Chowdhury is directed to a method for dynamically assigning a home agent that teaches that the network device is an AAA server, wherein the request packet is a RADIUS access request packet and wherein the reply packet is

a RADIUS access reply packet [See 0020]. It is obvious to one skilled in the art to use an AAA server as well as a RADIUS access request packet as described by Chowdhury in assigning a home agent as described by Inoue. The usage of the AAA server and the RADIUS protocol would increase the security capabilities of Inoue's system.

65. Claims 7-11, 17, 49-51 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Rai et al. (US Patent Number 6,421,714).

66. As per claims 7 and 49, Inoue is applied as stated in the rejection of claims 1 and 44, respectively. Inoue fails to teach that the mobility agent is adapted for functioning as both a home and foreign agent. Rai is directed to a Mobility management scheme which teaches that the mobility agent is adapted for functioning as a foreign agent and a home agent, and further comprising:

- r. Sending an agent advertisement indicating that the mobility agent is configured for functioning as a home agent and a foreign agent. [See Col. 37 lines 35-43].

Inoue and Rai are analogous art because they are both directed to methods for communications between wireless devices. Agent advertisements delivered to mobile devices located in the vicinity of the agent are well known in the art. It is obvious to one skilled in the art to use the agent advertisements as described by Rai in order to send

advertisements from access points to mobile nodes to inform them when they are in range of a home or foreign agent.

67. As per claims 8 and 50, Inoue and Rai are applied as stated in the rejection of claim 7 and 49, respectively. Rai further teaches that the agent advertisement further indicates an authentication domain (care-of-address) associated with the mobility agent. [See Col. 18 lines 19-64].

68. As per claim 9, Inoue and Rai are applied as stated in the rejection of claim 7. Rai further teaches that the agent advertisement further indicates that the mobile node should obtain an IP address (care-of-address) from a DHCP server (foreign agent). [See Col. 18 lines 19-64].

69. As per claim 10, Inoue and Rai are applied as stated in the rejection of claim 7. Rai further teaches that the agent advertisement further indicates that the mobile node should obtain an IP address (care-of-address) from the agent (foreign agent) with which the mobile node is registering. [See Col. 18 lines 19-64].

70. As per claims 11 and 51, Inoue and Rai are applied as stated in the rejection of claims 7 and 49, respectively. Rai further teaches that the agent advertisement further indicates that the mobile node should obtain an IP address (care-of-address) via the mobility agent (foreign agent). [See Col. 18 lines 19-64].

71. As per claims 17 and 58, Inoue is applied as stated in the rejection of claims 1 and 44, respectively. Inoue fails to teach the agent with which the mobile node is registering is a home agent on a network to which the mobile node has roamed. Rai is directed to a Mobility management scheme which teaches the agent with which the mobile node is registering is a home agent on a network to which the mobile node has roamed. [See Col. 37 lines 35-43]. Inoue and Rai are analogous art because they are both directed to methods for communications between wireless devices. Agents acting as home agents to its home mobile nodes and foreign agents to foreign mobile nodes is well known in the art. It is obvious to one skilled in the art to combine the registration abilities of Rai with the registration processes of Inoue.

72. Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Chowdhury et al. (US 2002/0114323) and in further view Rai et al. (US Patent Number 6,421,714).

73. As per claim 28, Inoue and Chowdhury are applied as stated in the rejection of claim 26. Inoue and Chowdhury fail to teach receiving an agent advertisement indicating an authentication domain associated with the mobility agent, determining whether the authentication domain associated with the mobility agent is different from that of the mobile node, wherein composing a registration request having a key request extension is performed when is determined that the authentication domain associated

Art Unit: 2131

with the mobility agent is different from that of the mobile node. Rai is directed to a Mobility management scheme which teaches:

- s. Receiving an agent advertisement indicating an authentication domain (care-of-address) associated with the mobility agent. [See Col. 18 lines 19-64].
- t. Determining whether the authentication domain associated with the mobility agent is different from that of the mobile node. [See Col. 16 line 66 – Col. 17 line 22]
- u. Wherein composing a registration request having a key request extension is performed when is determined that the authentication domain associated with the mobility agent is different from that of the mobile node. [See Col. 16 line 66 – Col. 17 line 22]

Inoue and Rai are analogous art because they are both directed to methods for communications between wireless devices. Agent advertisements delivered to mobile devices located in the vicinity of the agent are well known in the art. It is obvious to one skilled in the art to use the agent advertisements as described by Rai in order to send advertisements from access points to mobile nodes to inform them when they are in range of a home or foreign agent.

74. As per claim 29, Inoue, Chowdhury and Rai are applied as stated in the rejection of claim 28. Rai teaches that the agent advertising further indicates that the mobile node should obtain an IP address (care-of-address) from a DHCP server (foreign

agent), further comprising obtaining an IP address from a DHCP server. [See Col. 18 lines 19-64].

75. As per claim 30, Inoue, Chowdhury and Rai are applied as stated in the rejection of claim 28. Rai further teaches that the agent advertisement further indicates that the mobile node should obtain an IP address (care-of-address) from the mobility agent (foreign agent), further comprising obtaining an IP address from the mobility agent. [See Col. 18 lines 19-64].

76. As per claim 31, Inoue and Chowdhury are applied as stated in the rejection of claim 26. Inoue and Chowdhury fail to teach that the mobility agent is adapted for functioning as both a home and foreign agent. Rai is directed to a Mobility management scheme which teaches that the mobility agent is adapted for functioning as a foreign agent and a home agent, and further comprising:

- v. Receiving an agent advertisement from the mobility agent indicating that the mobility agent is configured for functioning as a home agent and a foreign agent. [See Col. 37 lines 35-43].

Inoue and Rai are analogous art because they are both directed to methods for communications between wireless devices. Agent advertisements delivered to mobile devices located in the vicinity of the agent are well known in the art. It is obvious to one skilled in the art to use the agent advertisements as described by Rai in order to send

Art Unit: 2131

advertisements from access points to mobile nodes to inform them when they are in range of a home or foreign agent.

77. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 6,167,513) in view of Agraharam et al. (US 6,407,988) and in further view of Rai (US Patent Number 6,421,714).

78. As per claim 66, Inoue and Agraharam are applied as stated in the rejection of claim 64. Inoue and Agraharam fail to teach that the registration packet indicates an IP address is requested. Rai is directed to a Mobility management scheme which teaches that the registration request packet indicates that an IP address is requested, comprising:

- w. Assigning an IP address to the Mobile Node. [See Col. 9 line 61 – Col. 10 line 14]
- x. Wherein the registration reply packet includes the assigned IP address.
[See Col. 9 line 61 – Col. 10 line 14]

Inoue and Rai are analogous art because they are both directed to methods for communications between wireless devices. Including and IP address in the reply packet is well known in the art. It is obvious to include the IP address of Rai in the method of receiving a reply of Inoue in order to identify which agent the node is registered with and to keep track of the node.

Conclusion

79. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Das et al. (US 2002/0026527) is directed to dynamic mobility agents. Dynarski et al. (US 6,970,443) is directed to dynamic allocation of mobile nodes over an IP network. Tsuda (US 2002/0065785) is directed to a method for using mobile IP with AAA protocols. Bergenwall et al. (US 6,567,664) is directed to the registration of mobile nodes in Mobile IP.

80. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Cervone whose telephone number is 571-272-3712. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MAC 5/23/06


AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100